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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,487	06/18/2001	Jin-Ho Park	AB-1668-1D US	5097

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IP Section  
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EXAMINER
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PIZIALI, JEFFREY J

ART UNIT	PAPER NUMBER
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2629

MAIL DATE	DELIVERY MODE
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04/30/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/884,487	<b>Applicant(s)</b> PARK, JIN-HO	
	<b>Examiner</b> Jeff Piziali	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10,12,13 and 16-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10,12,13 and 16-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/130,005.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Terminal Disclaimer***

1. The terminal disclaimer filed on *10 February 2009* disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of *Patent Number 6,275,208* has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent *Application No. 09/130,005*, filed on 6 August 1998.

### ***Claim Duplicates***

3. Applicant is advised that should *claim 17* be found allowable, *claim 18* will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 10, 17, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by ***Haynie et al (US 5,729,448 A)***.

Regarding claim 10, ***Haynie*** discloses an apparatus [*Fig. 1*] comprising:

a transformer [*Fig. 1: 14*] including a primary coil [*Fig. 1: 16*] and a first secondary coil [*Fig. 1: 18*] coupled [*Fig. 1: via 22*] to the primary coil by magnetic induction (*see Column 3, Lines 18-51*);

a switch [*Fig. 1: 32*] connected to the primary coil;

a first rectifier circuit [*Fig. 1: 25*] connected to the primary coil to generate a first direct current output voltage [*Fig. 1: Vcc*],

the first rectifier circuit not directly physically connected to the first secondary coil, and

a second rectifier circuit [*Fig. 1: 24, 28*] connected to the first secondary coil to generate a second direct current output voltage (*see Column 3, Line 52 - Column 4, Line 45*).

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Regarding claim 17, **Haynie** discloses an input voltage port [Fig. 1: 12] that is connected to the primary coil to provide direct current input voltage [Fig. 1: +3.3 volts] to the primary coil (see Column 3, Lines 18-51).

Regarding claim 18, this claim is rejected by the reasoning applied in rejecting claim 17.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 12 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Haynie et al (US 5,729,448 A)** in view of **Williams et al (US 5,777,862 A)**.

Regarding claim 12, **Haynie** discloses the first rectifier circuit comprises a first diode [Fig. 1: 25] and wherein

the second rectifier circuit comprises a second diode [Fig. 1: 24] and a second capacitor [Fig. 1: 28].

**Haynie** does not expressly disclose the first rectifier circuit comprises a first diode and a first capacitor.

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However, **Williams** does disclose a first rectifier circuit [Fig. 2: 10V, C6] connected to a primary transformer coil [Fig. 2: W2] comprises a first diode [Fig. 2: 10V] and a first capacitor [Fig. 2: C6] (see Column 5, Line 40 - Column 6, Line 43).

**Haynie** and **Williams** are analogous art, because they are from the shared inventive field of DC-to-DC voltage converters. Therefore, it would have been obvious to use **Williams'** first rectifier circuit in the place of **Haynie's** first rectifier circuit, because the substitution of one known rectifier circuit for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Regarding claim 19, **Haynie** does not expressly disclose a second secondary coil coupled in series to the first secondary coil.

However, **Williams** discloses a transformer [Fig. 2: T1] further comprises a second secondary coil [Fig. 2: W5] coupled in series to a first secondary coil [Fig. 2: W4] and coupled to the primary coil by magnetic induction, and the apparatus [Fig. 2] further comprises

a second rectifier circuit [Fig. 2: D2, C2] connected to the first secondary coil to generate a second direct current output voltage [Fig. 2: +15V]

a third rectifier circuit [Fig. 2: D3, C3] connected to the second secondary coil to generate a third direct current output voltage [Fig. 2: -15V] (see Column 5, Line 40 - Column 6, Line 43).

It would have been obvious to use **Williams'** two series connected secondary coil circuits in the place of **Haynie's** single secondary coil circuit, so as to provide polarity inversed operational supply voltages for powering loads.

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Regarding claim 20, **Williams** discloses a node between the first secondary coil and the second secondary coil has a fixed voltage [*Fig. 2: GND*].

Regarding claim 21, **Williams** discloses the node between the first secondary coil and the second secondary coil is grounded [*Fig. 2: GND*].

Regarding claim 22, **Williams** discloses each of the first [*Fig. 2: 10V, C6*], second [*Fig. 2: D2, C2*], and third rectifier circuits [*Fig. 2: D3, C3*] comprises a diode and a capacitor.

Regarding claim 23, **Williams** discloses the diode of the second rectifier circuit is connected in a forward bias direction [*Fig. 2: D2*] from the first secondary coil, and the diode of the third rectifier circuit is connected in a reverse bias direction [*Fig. 2: D3*] from the second secondary coil.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Haynie et al (US 5,729,448 A)** in view of **Liu et al (US 5,808,879 A)**.

Regarding claim 13, **Haynie** does not expressly disclose an inductor that is coupled across the primary coil.

However, **Liu** discloses an inductor [*Fig. 2(a); Lm*] that is coupled across a primary coil [*Fig. 2(a); Np*] of a transformer [*Fig. 2(a); T*] (*see Column 5, Lines 30-65*).

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**Haynie** and **Liu** are analogous art, because they are from the shared inventive field of DC-to-DC voltage converters.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place **Liu's** magnetizing inductor in parallel with **Haynie's** primary coil, so as to reduce voltage stress on the switches, reduce EMI noise and switching losses, obtain for the rectifying diode a low di/dt, and provide zero-voltage-switching (**Liu**: Column 9, Lines 56-63).

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Haynie et al (US 5,729,448 A)** and **Liu et al (US 5,808,879 A)** as applied to claim 13 above, and further in view of **Williams et al (US 5,777,862 A)**.

Regarding claim 16, **Haynie** discloses the first rectifier circuit comprises a first diode [Fig. 1: 25] and wherein

the second rectifier circuit comprises a second diode [Fig. 1: 24] and a second capacitor [Fig. 1: 28].

Neither **Haynie** nor **Liu** expressly disclose the first rectifier circuit comprises a first diode and a first capacitor.

However, **Williams** does disclose a first rectifier circuit [Fig. 2: 10V, C6] connected to a primary transformer coil [Fig. 2: W2] comprises a first diode [Fig. 2: 10V] and a first capacitor [Fig. 2: C6] (see Column 5, Line 40 - Column 6, Line 43).

**Haynie**, **Liu**, and **Williams** are analogous art, because they are from the shared inventive field of DC-to-DC voltage converters. Therefore, it would have been obvious to use **Williams'**



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first rectifier circuit in the place of *Haynie's* first rectifier circuit (and combined with *Liu's* parallel inductor arrangement), because the substitution of one known rectifier circuit for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Haynie et al (US 5,729,448 A)* and *Williams et al (US 5,777,862 A)* as applied to claim 19 above, and further in view of *Liu et al (US 5,808,879 A)*.

Regarding claim 24, neither *Haynie* nor *Williams* expressly disclose an inductor that is coupled in parallel to the primary coil.

However, *Liu* discloses an inductor [*Fig. 2(a); Lm*] that is coupled across a primary coil [*Fig. 2(a); Np*] of a transformer [*Fig. 2(a); T*] (*see Column 5, Lines 30-65*).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place *Liu's* magnetizing inductor in parallel with *Haynie's* primary coil (and combined with *Williams's* two series connected secondary coil circuits), so as to reduce voltage stress on the switches, reduce EMI noise and switching losses, obtain for the rectifying diode a low di/dt, and provide zero-voltage-switching (*Liu: Column 9, Lines 56-63*).

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***Response to Arguments***

11. Applicant's arguments filed 10 February 2009 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 10, 12, 13, and 16-24 have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571)272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/  
Primary Examiner, Art Unit 2629  
27 April 2009